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(71) Applicant: **TDK Corporation**
**Chuo-ku, Tokyo (JP)**

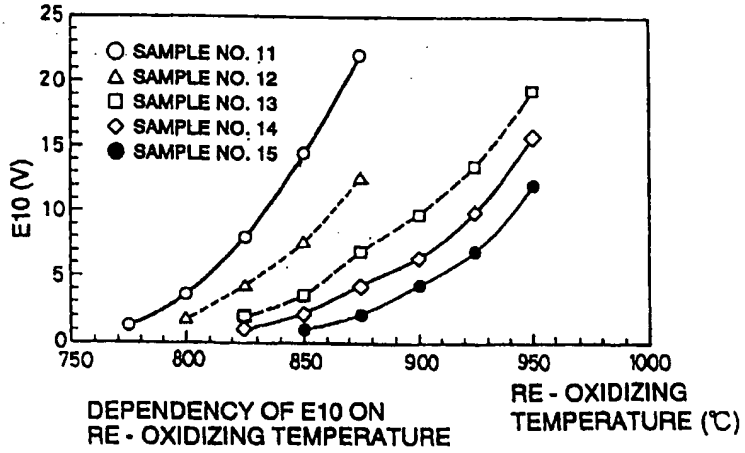
(72) Inventors:
- **Fukuda, Masaru**
  **Kitakyushu-shi, Fukuoka (JP)**
- **Ogasawara, Tadashi**
  **Chuo-ku, Tokyo (JP)**
- **Marui, Toshio**
  **Chuo-ku, Tokyo (JP)**

(74) Representative: **Vogeser, Werner, Dipl.-Ing. et al**
**Patent- und Rechtsanwälte**
**Hansmann, Vogeser, Dr. Boecker,**
**Alber, Dr. Strych, Liedl**
**Albert-Rosshaupter-Strasse 65**
**81369 München (DE)**

## (54) Voltage-dependent nonlinear resistor ceramics

(57) A voltage-dependent nonlinear resistor or varistor ceramic composition consists essentially of (1) an oxide of the formula: $\{[Sr_{(1-x-y)}Ba_xCa_y\}_zTiO_3$ wherein $0.3 < x \leq 0.9$, $0.1 \leq y \leq 0.5$, $x + y \leq 1$, and $0.84 < z < 1.16$, (2) 0.001 to 5.000 mol% of at least one oxide of niobium, tantalum, tungsten, manganese or R wherein R is yttrium or lanthanide, (3) 0.001 to 5.000 mol% of $SiO_2$, and (4) 0.001 to 5.000 mol% of MgO. When the varistor voltage is controlled by changing a re-oxidizing temperature without changing the composition, a satisfactory nonlinear index $\alpha$ is available over a wide range of varistor voltage. The dependency of varistor voltage on heat treating temperature is reduced.

FIG. 3




DEPENDENCY OF E10 ON RE - OXIDIZING TEMPERATURE

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